FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

1 to 14 June, 2014 (weeks 23 & 24)

Overall Summary

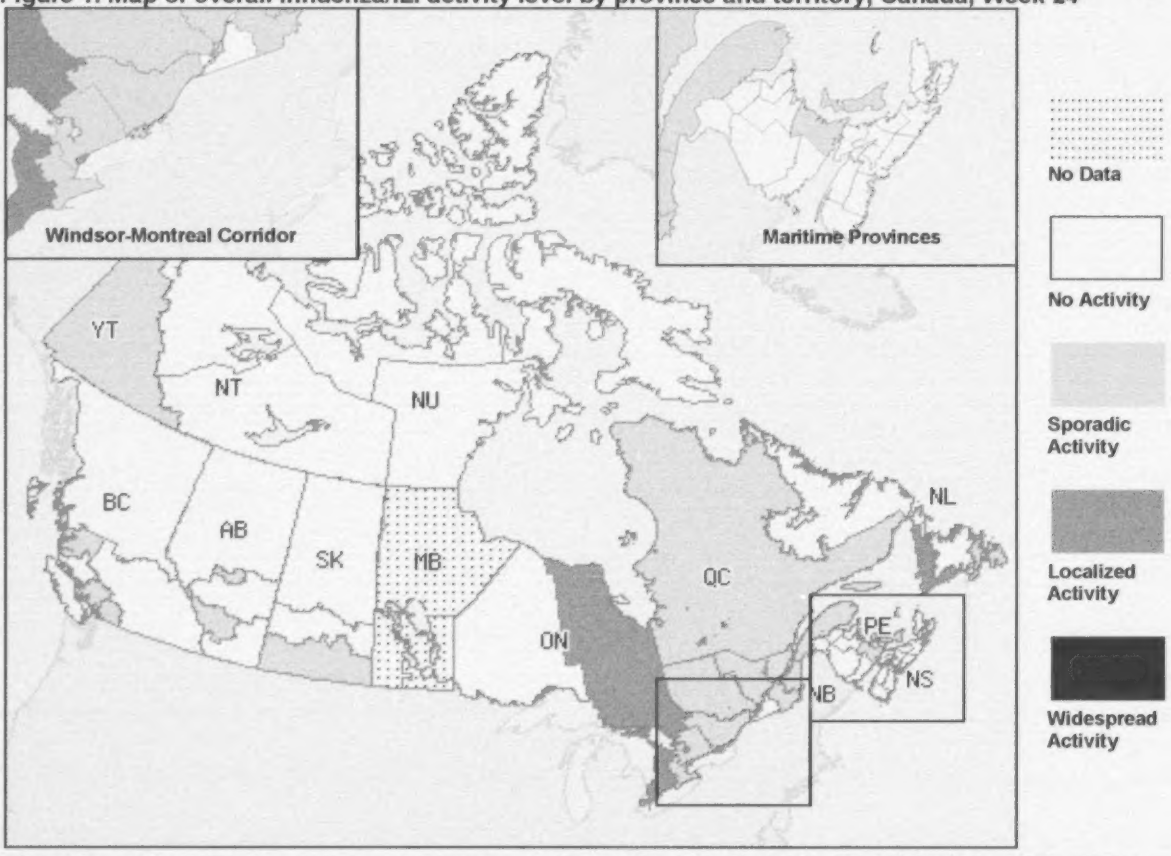
- In weeks 23 and 24, influenza activity in Canada continued to decline and is approaching inter-seasonal levels. Influenza B has circulated later into the spring than in previous seasons, but overall activity remains within expected levels.
- As of week 24, 5,272 hospitalizations and 326 deaths have been reported from participating regions, which is slightly more hospitalizations but fewer deaths than were reported last year.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2014-15 influenza season?
Contact us at FluWatch@phac-aspc.gc.ca

Influenza/ILI Activity (geographic spread)

In week 23, nine regions reported localized activity (ON(6), PE(1), NS(1), NL(1)). In week 24, four of these regions continued to report localized activity (ON(3) and NL(1)) (Figure 1). Five regions did not report data in week 24.

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 24

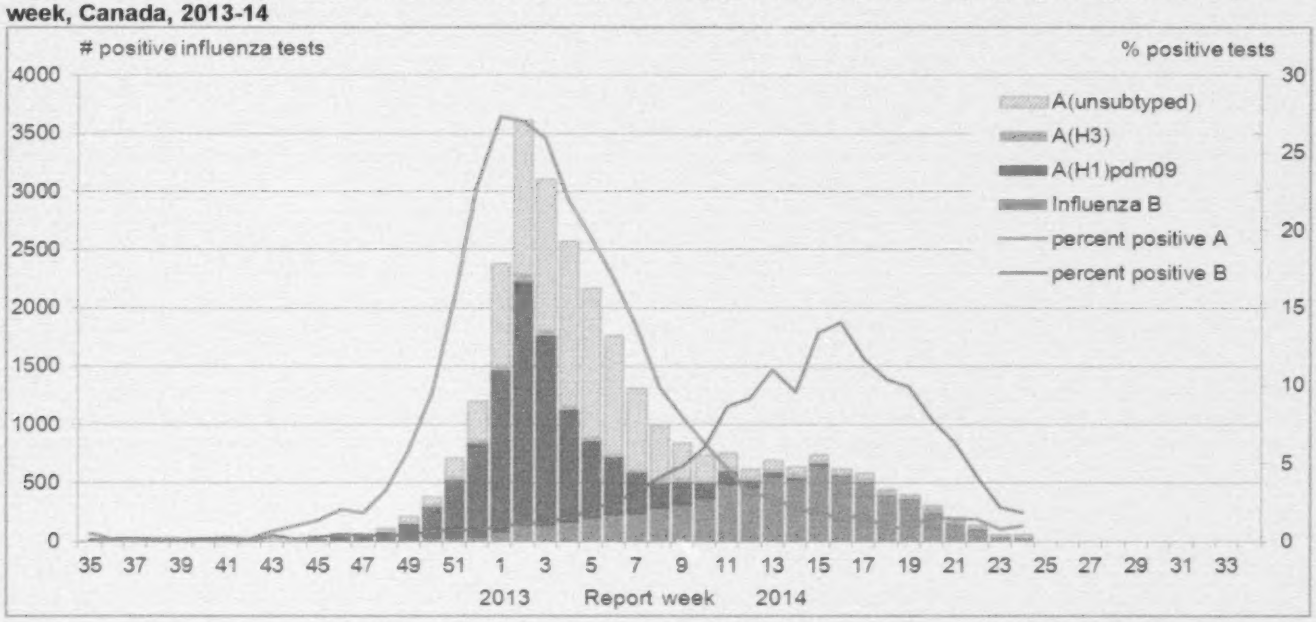


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests continued to decline from 141 in week 22 to 60 in week 23, and 57 (2.8% of tests) in week 24 (Figure 2). Influenza B remained the predominant virus in weeks 23 and 24, representing 69% of influenza detections. Most jurisdictions have reported low numbers of influenza detections in weeks 23 and 24 (Table 1). This season, A(H1N1)pdm09 predominantly affected adults 20-64 years of age and children <5 years of age, while influenza B affected greater proportions of adults ≥65 years of age and children 5-19 years of age (Table 2).

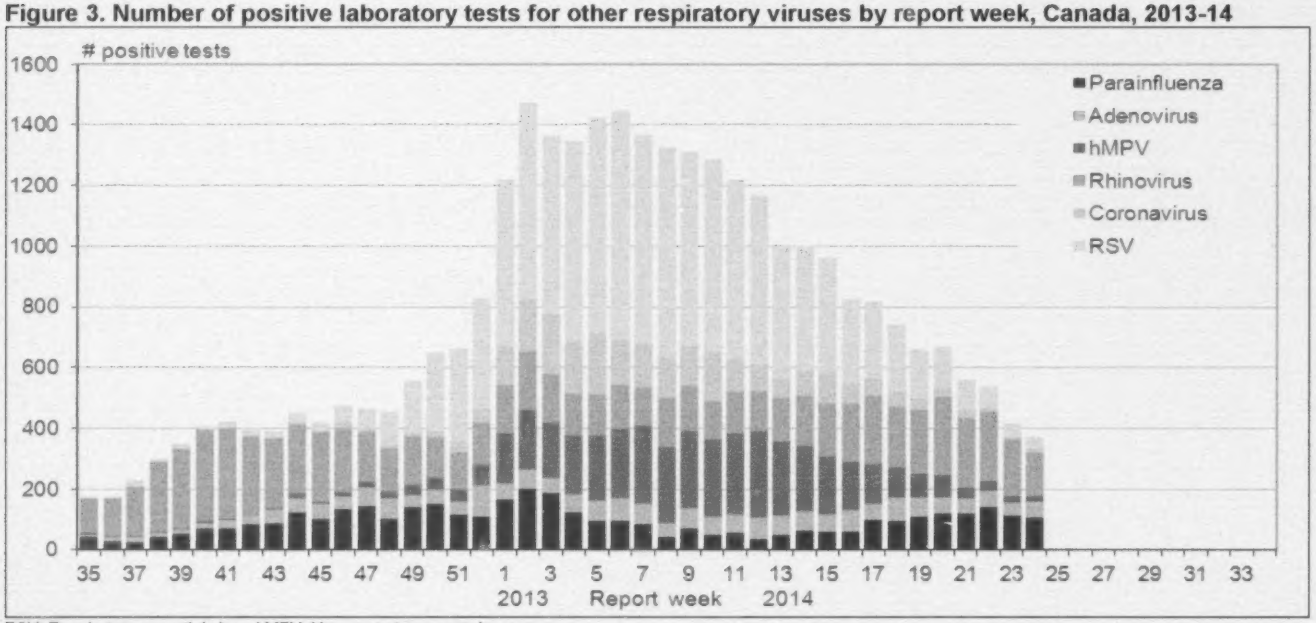
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



Detections of RSV, coronavirus, and human metapneumovirus have continued to decline and are approaching inter-seasonal levels. The number of positive tests for parainfluenza declined slightly in weeks 23 and 24, and detections of adenovirus have been stable over recent weeks, in keeping with the broader year-round circulation of these viruses. Detections of rhinovirus in recent weeks have been higher than during the same period over the past three seasons, however the number of positive tests decreased in weeks 23 and 24 (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Two weeks (June 1 to 14, 2014)					Cumulative (August 25, 2013 to June 14, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	11	0	11	0	6	1,822	1,614	69	139	377
AB	7	0	3	4	19	3,889	3,462	107	320	554
SK	0	0	0	0	2	1,384	988	8	388	195
MB	0	0	0	0	7	685	463	7	215	72
ON	12	2	3	7	18	5,816	2,497	410	2,909	3,102
QC	6	0	0	6	8	5,376	677	6	4,693	2,742
NB	0	0	0	0	8	1,491	370	2	1,119	122
NS	0	0	0	0	5	175	134	5	36	52
PE	0	0	0	0	1	119	118	0	1	5
NL	0	0	0	0	7	381	104	0	277	265
Canada	**36**	**2**	**17**	**17**	**81**	**21,138**	**10,427**	**614**	**10,097**	**7,486**
Percentage[2]	30.8%	5.6%	47.2%	47.2%	69.2%	73.8%	49.3%	2.9%	47.8%	26.2%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

Age groups (years)	Two weeks (June 1 to 14, 2014)					Cumulative (August 25, 2013 to June 14, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	1	0	0	1	2	3,270	1,453	41	1,776	557	3,827	16.5%
5-19	1	0	0	1	4	1,334	707	27	600	823	2,157	9.3%
20-44	7	1	2	4	8	5,104	2,818	54	2,232	1,027	6,131	26.5%
45-64	4	1	1	2	13	4,481	2,394	66	2,021	1,519	6,000	25.9%
65+	9	0	0	9	16	2,644	1,001	177	1,466	2,269	4,913	21.2%
Unknown	1	0	0	1	0	137	102	21	14	9	146	0.6%
Total	23	2	3	18	43	16,970	8,475	386	8,109	6,204	23,174	100.0%
Percentage[2]	34.8%	8.7%	13.0%	78.3%	65.2%	73.2%	49.9%	2.3%	47.8%	26.8%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 2,261 influenza viruses [150 A(H3N2), 1,389 A(H1N1)pdm09 and 722 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain, and one A(H3N2) virus showed reduced titres to antiserum against the reference A/Texas/50/2012 strain. Twenty-seven influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

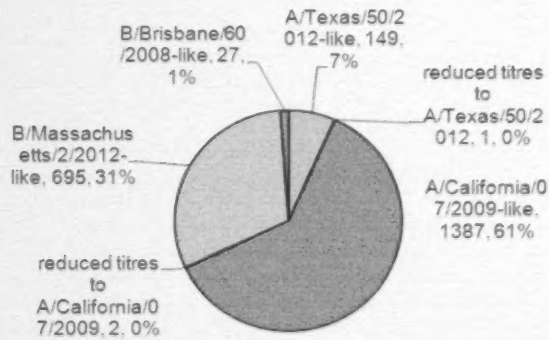

B/Brisbane/60/2008-like, 27, 1%
A/Texas/50/2012-like, 149, 7%
reduced titres to A/Texas/50/2012, 1, 0%
B/Massachusetts/2/2012-like, 695, 31%
A/California/07/2009-like, 1387, 61%
reduced titres to A/California/07/2009, 2, 0%

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 2,261

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 2,125 influenza viruses for resistance to oseltamivir and all but five were sensitive. All 2,130 viruses tested for resistance to zanamivir were sensitive. All 1,630 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

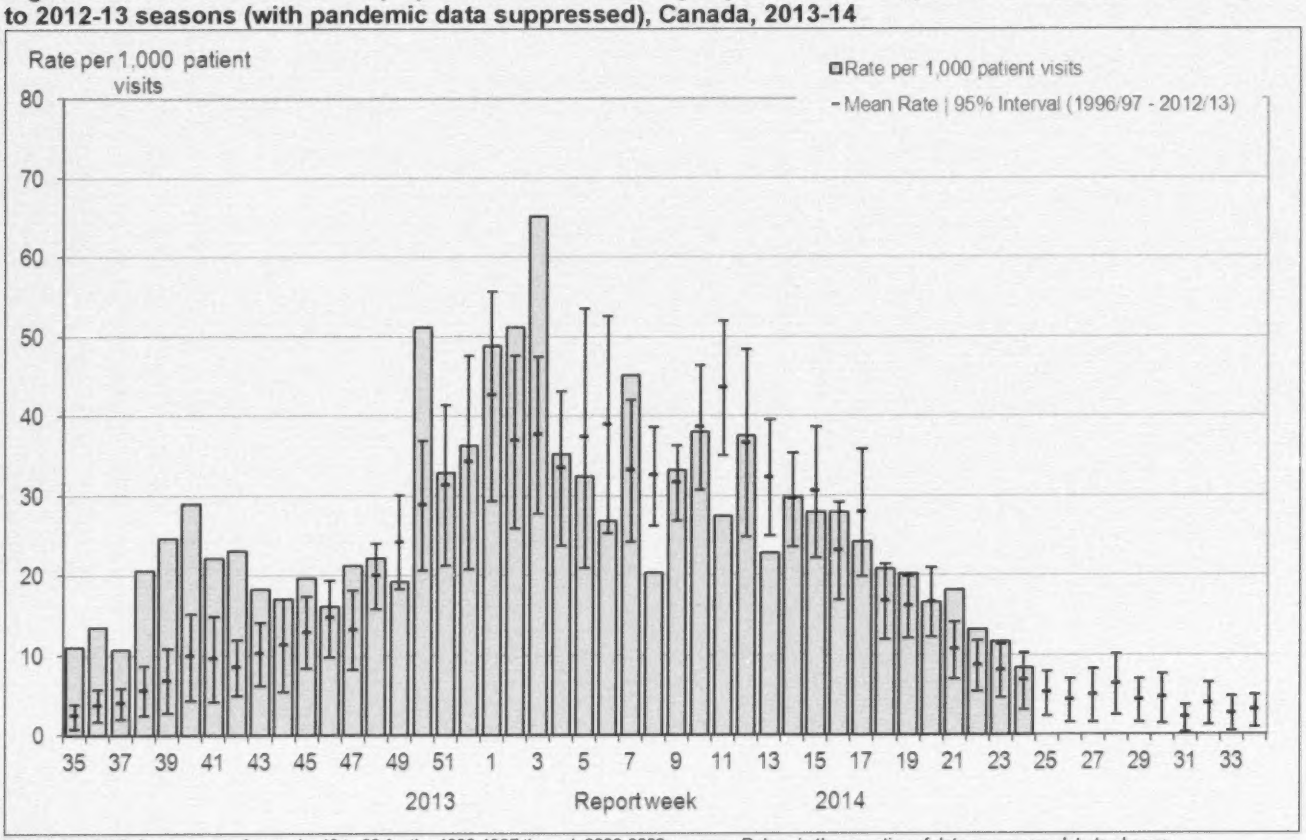
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	128	0	128	0	188	188 (100%)
A (H1N1)	1378	5 (0.4%)	1384	0	1442	1442 (100%)
B	619	0	618	0	NA[1]	NA[1]
TOTAL	2125	5 (0.2%)	2130	0	1630	1630 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate continued to decrease from 13.2 consultations per 1,000 patient visits in week 22 to 11.6 per 1,000 in week 23 and 8.4 per 1,000 in week 24. The rate for week 23 was slightly above the expected range for this time of year, but the rate for week 24 with within the expected range (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

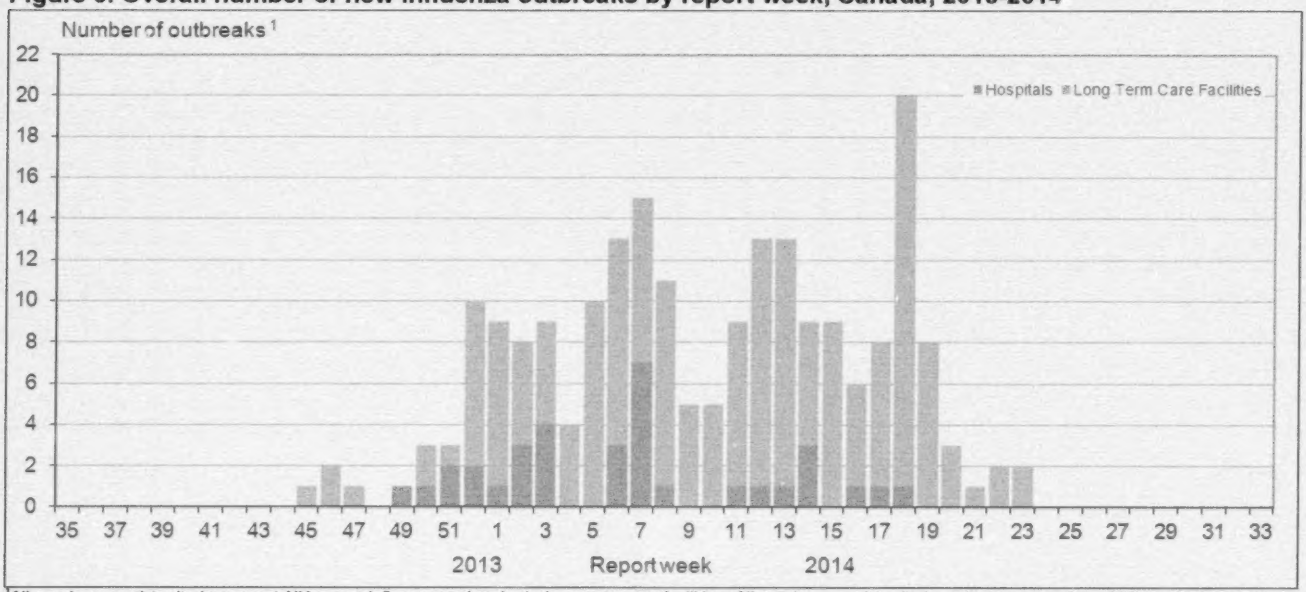


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

The number of new influenza outbreaks was low in weeks 23 and 24, with two outbreaks reported in long-term care facilities (Figure 6).

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

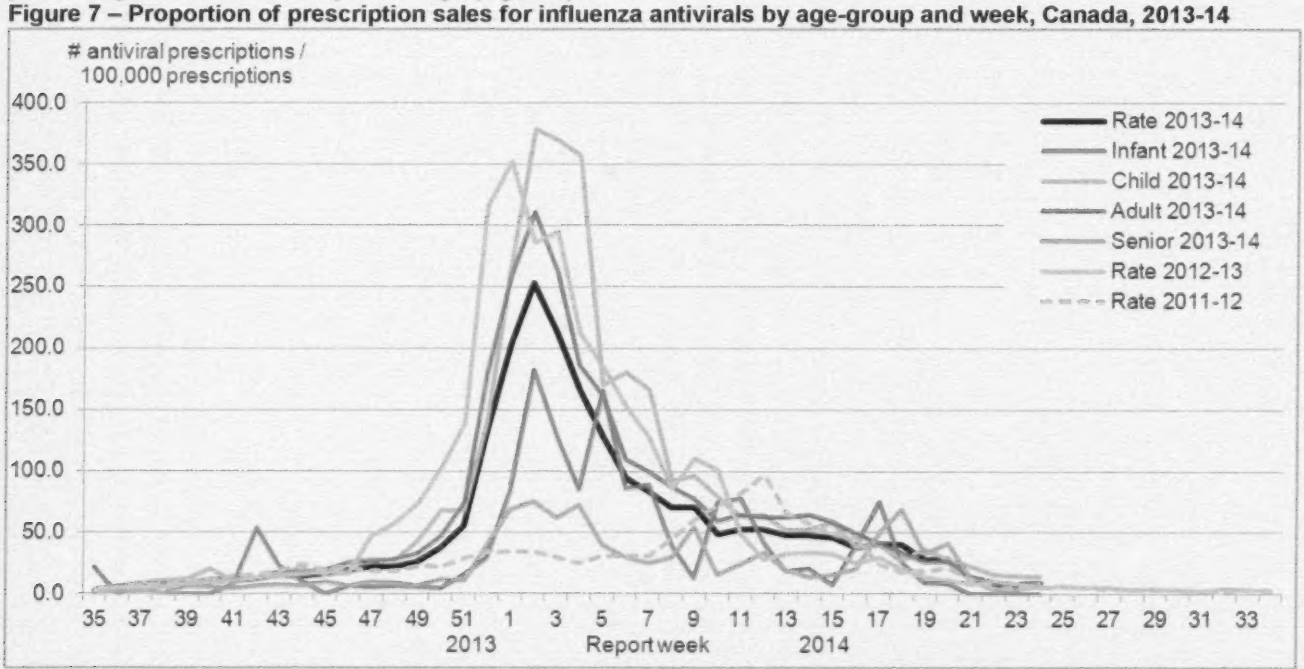


[1] All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In weeks 23 and 24, the proportion of prescriptions for antivirals continued to decline and is approaching inter-seasonal levels. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In weeks 23 and 24, two new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. Both were cases of influenza B in children 2-4 years of age (Figure 8a). A greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. No ICU admissions or deaths were reported in weeks 23 or 24. Five of the 12 IMPACT hospitals have not had an influenza-associated paediatric admission in at least four weeks.

To date this season, a total of 709 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 78% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 73% of cases to date (Table 4). One hundred and ten ICU admissions have been reported, of which 72 (65%) were children <5 years of age (Figure 9a). All but 14 were cases with influenza A, and 97% of those subtyped were A(H1N1)pdm09. Among the 107 ICU cases with available data, 68 (64%) were reported to have underlying medical conditions. One death has been reported this season. A smaller number of paediatric hospital admissions have been reported this year compared to the 2012-13 season.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

Surveillance of laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network has ended for the 2013-14 season (Figure 8b). A summary of PCIRN-SOS data for the 2013-14 season will be included in the FluWatch annual report of influenza surveillance in Canada.

During passive and active surveillance* from August 25th, 2013 to May 31st, 2014, 1,985 influenza-associated hospitalizations were reported by the PCIRN-SOS network, 1,338 (67.4%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). Compared to the 2012-13 season, slightly more cases were reported, although the peak number of cases was smaller. A greater number of cases were reported during March and April compared to last year, with six times more cases of influenza B reported. ICU admission was required for 321 hospitalizations, of which 263 were cases with influenza A (137 A(H1N1)pdm09, ten A(H3N2) and 116 A(unsubtyped)), 57 were cases with influenza B and the influenza type was not reported for one case. A greater proportion of cases were admitted to the ICU this season compared to last year, but the proportion of deaths was similar. Of the ICU admissions with available information, 85.9% (189/220) were reported to have at least one comorbidity, and 68.2% (176/258) reported not having been vaccinated this season. Among the 112 deaths reported this season, all but 28 were cases of influenza A (51 A(H1N1)pdm09, three A(H3N2) and 30 A(unsubtyped)); ten cases 20-44 years of age, 37 cases 45-64 years of age and 65 cases ≥65 years of age (Figure 9b). Among fatal cases with available information, 93.8% (60/64) were reported to have at least one comorbidity, and 48.2% (40/83) reported not having been vaccinated this season.

Note: During the 2013-14 influenza season, PCIRN-SOS conducted passive surveillance from August 25th to November 14th, 2013, and May 16th to 31st. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance was conducted between November 15th, 2013 and May 15th, 2014 during which time PCIRN site coordinators investigated cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

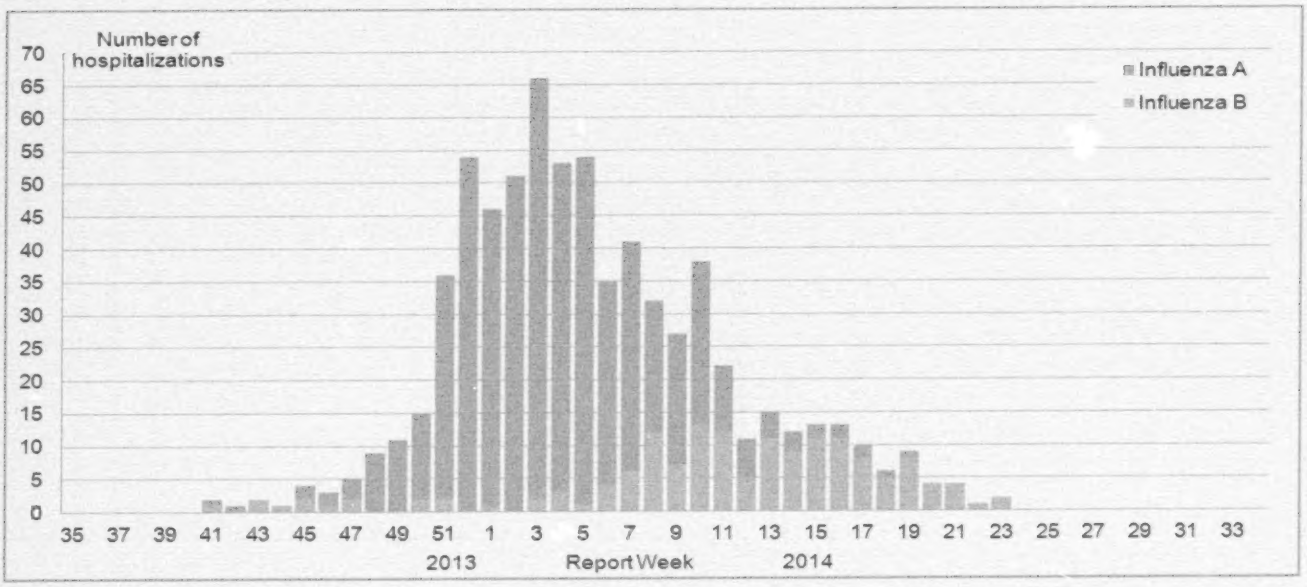
Age groups	Cumulative (25 Aug. 2013 to 14 June 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	107	37	0	70	10	117 (17%)
6-23m	162	57	1	104	29	191 (27%)
2-4y	163	55	3	105	49	212 (30%)
5-9y	85	31	1	53	54	139 (20%)
10-16y	38	13	1	24	12	50 (7%)
Total	555	193	6	356	154	709
% [1]	78.3%	34.8%	1.1%	64.1%	21.7%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

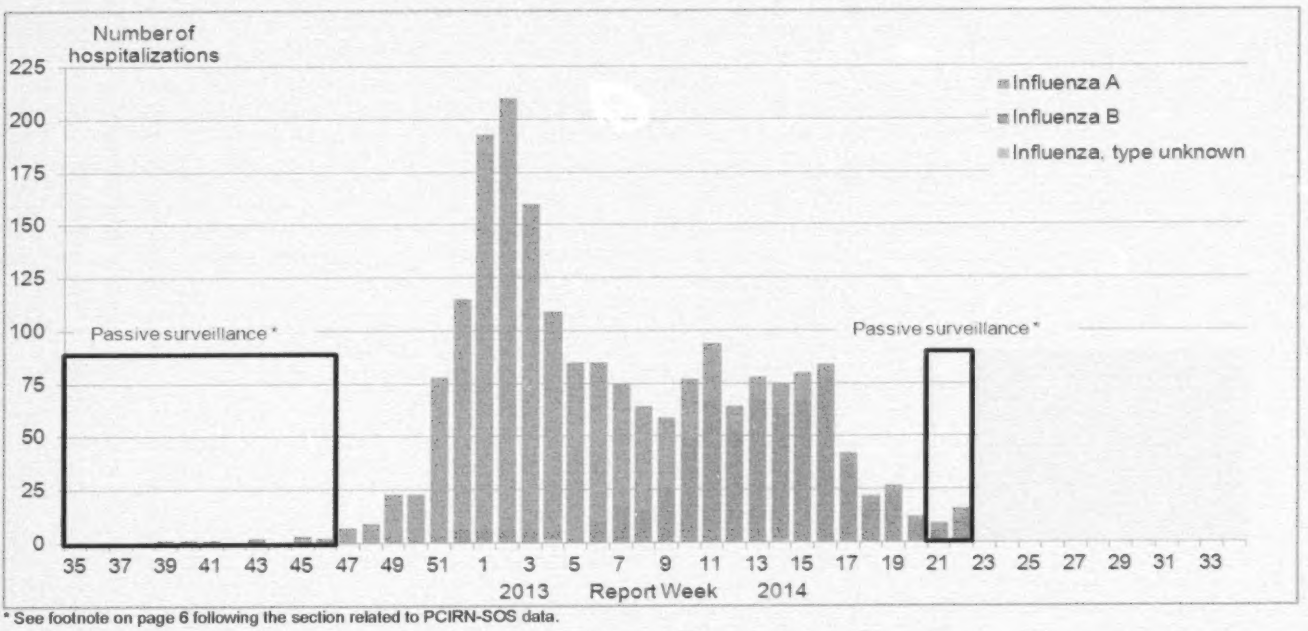
Age groups (years)	Cumulative (25 Aug. 2013 to 31 May 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	13	5	1	7	2	15 (1%)
20-44	276	142	7	127	47	323 (16%)
45-64	521	245	12	264	135	656 (33%)
65+	525	238	61	226	460	985 (50%)
Total	1,335	630	81	624	644	1,979
% [1]	67%	47%	6%	47%	33%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Two cases for which the influenza type has not yet been reported, and four cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



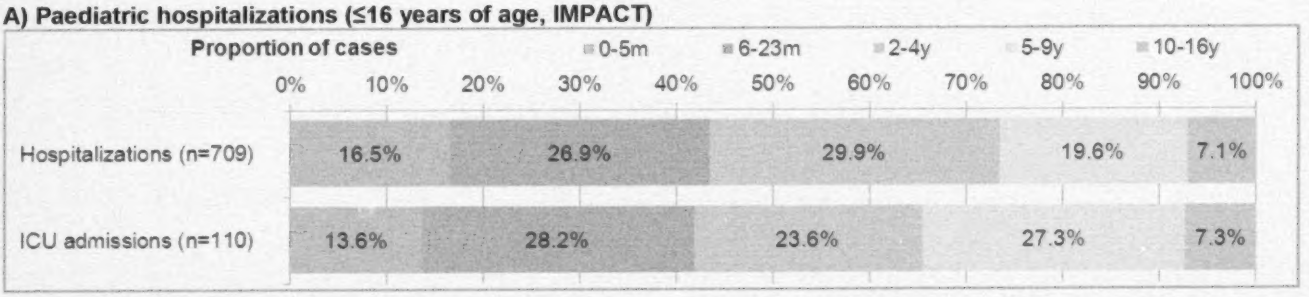
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



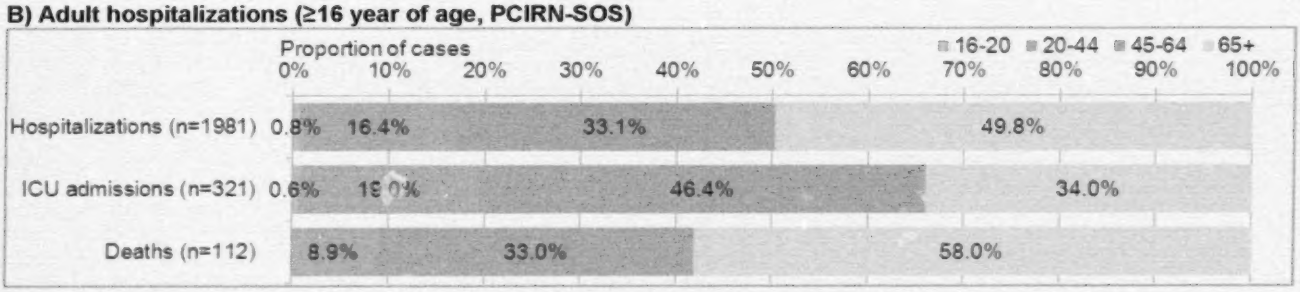
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In weeks 23 and 24, 141 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* As with other surveillance indicators in weeks 23 and 24, the majority were cases of influenza B (115, 81.6%). There were no ICU admissions reported in weeks 23 & 24. Twelve deaths were reported: one adult 45-64 years of age, and 11 adults ≥65 years of age; 11 of the 12 were cases of influenza B. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 5,272 influenza-associated hospitalizations have been reported, 69.6% with influenza A. The majority of hospitalizations have been cases 45 years of age of older: 27.1% 45-64 years of age and 35.9% ≥65 years of age. A significantly greater proportion of cases of influenza B have been ≥65 years of age, and 5-19 years of age, compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 375 ICU admissions have been reported this season, of which 64.0% were adults 20-64 years of age. A total of 326 deaths have been reported. The highest proportion of deaths has been among adults ≥65 years of age (55.8%) followed by adults 20-64 years of age (35.9%). In keeping with the late-season circulation, influenza B has been increasingly reported among hospitalized cases of influenza. To date this season, influenza B has been reported in 30.4% of hospitalizations and 33.7% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 14 June 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	623	288	13	322	133	756 (14%)
5-14	137	65	6	66	115	252 (5%)
15-19	39	22	4	13	9	48 (1%)
20-44	620	424	7	189	97	717 (14%)
45-64	1,130	710	32	388	301	1,431 (27%)
65+	981	469	115	397	914	1,895 (36%)
Unknown	138	99	3	36	35	173 (3%)
Total	3,668	2,077	180	1,411	1,604	5,272
Percentage[1]	69.6%	56.6%	4.9%	38.5%	30.4%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Five new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to June 19, 2014, the WHO has been informed of a total of 447 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 158 deaths.

Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Despite recent increases in the number of cases and sporadic reports of cases exported outside the Middle East, the public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk). Globally, from September 2012 to June 19, 2014, the WHO has been informed of a total of 701 laboratory-confirmed cases of infection with MERS-CoV, including 249 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.